at the Signal-Service stations, with the average depth at which the observations were made, are given in the table below, with monthly ranges of water-temperatures and the mean temperature of the air at the various stations. Observations were interrupted by ice at the following stations: Sandusky, Ohio, from the 1st to 14th, and from the 20th to 31st; Cleveland, Ohio, from 1st to 16th, and from 19th to 31st; Duluth, Minnesota, from 1st to 23d, and 28th to 31.

The largest monthly ranges of water-temperature are: Galveston, Texas, 15°; Indianola, Texas, 13°.7; Key West, Florida, 11°.6; Cedar Keys, Florida, 11°; Sandy Hook, New Jersey, 10°.6. The smallest are: Eastport, Maine, 1°.6; Wilmington, North Carolina, 3°; Portland, Oregon, 3°.5; San Francisco, California, 3°.8; Baltimore, Maryland, 4°; New London, Connecticut, 4°.

Temperature of Water for March, 1883.

STATION.	Temperature at bottom.		Range.	Average depth, feet and inches.	Mean temperature of the air at station.
	Max.	Min.			
	°	°	°	ft. in.	°
Atlantic City, New Jersey	40.0	34.5	5.5	6 0	35.0
Alpena, Michigan*					
Augusta, Georgia	60.0	50.5	9.5	9 0	53.8
Baltimore, Maryland	42.	38.0	4.0	9 5	39.4
Block Island, Rhode Island	39.7	30.3	9.4	8 7	32.6
Boston, Massachusetts	34.0	28.0	6.0	25 0	31.3
Buffalo, New York*					
Cedar Keys, Florida	71.0	60.0	11.0	10 2	61.3
Charleston, South Carolina	58.5	53.4	5.1	39 10	53.8
Chicago, Illinois*					
Chincoteague, Virginia	47.5	38.0	9.5	5 8	38.7
Cleveland, Ohio†	34.3	34.2		14 0	28.4
Detroit, Michigan*					
Delaware Breakwater, Delaware	41.3	36.1	5.2	6 2	37.0
Duluth, Minnesota†	35.2	33.6		15 8	22.0
Eastport, Maine	32.2	30.6	1.6	16 9	23.6
Escanaba, Michigan*					
Galveston, Texas	61.0	46.0	15.0	14 8	62.4
Grand Haven, Michigan	36.6	29.0	7.6	19 0	27.3
Indianola, Texas	71.5	57.8	13.7	9 1	64.0
Jacksonville, Florida	66.0	60.0	6.0	18 0	60.4
Key West, Florida	81.4	69.8	11.6	16 9	72.7
Mackinaw City, Michigan *					
Marquette, Michigan *					
Milwaukee, Wisconsin *.					
Mobile, Alabama	63.5	55.0	8.5	16 3	57.7
New Haven, Connecticut	38.6	30.6	8.0	14 3	29.9
New London, Connecticut	38.0	34.0	4.0	12 8	32.2
Newport, Rhode Island	38.5	31.7	6.8	10 5	32.0
New York City	37.7	31.7	6.0	10 5	33.6
Norfolk, Virginia	51.0	42.0	9.0	17 2	44.8
Pensacola, Florida	66.8	56.9	9.9	17 9	58.0
Portland, Maine	34.5	31.0	3.5	18 6	28.9
Portland, Oregon	48.0	40.2	7.8	47 4	50.4
Port Eads, Louisiana	55.0	45.7	9.3	9 11	60.8
Provincetown, Massachusetts	36.0	30.5	5.5	14 0	30.1
Punta Rassa, Florida	75.0	66.6	8.4	11 3	67.1
Sandusky, Ohio†	32.6	31.6		10 0	31.2
Sandy Hook, New Jersey	42.8	32.2	10.6	1 4	34.4
San Francisco, California	54.6	50.8	3.8	29 5	53.0
Savannah, Georgia	58.0	53.0	5.0	13 7	57.1
Smithville, North Carolina	58.0	49.0	9.0	10 0	48.8
Toledo, Ohio*					
Wilmington, North Carolina	53.0	50.0	3.0	13 0	50.8

* Frozen throughout month. † Observations incomplete. See text.

ATMOSPHERIC ELECTRICITY.

AURORAS.

On the evening of March 1st an auroral display was observed at stations in New England, and from the upper lake region westward to Montana; the most southerly stations reporting the display being in Nebraska and Iowa. This display, although extensively observed, was not brilliant.

On the 2d, a display was reported from stations in the upper lake region, extreme northwest, and the upper Mississippi valley. At Burlington, Vermont, it was observed in the form of a bright yellow light, with a few streamers, from 9 to 11 p. m., and continued until 12.20 a. m. of the 3d. It extended from 15° east to 25° west of north and to an altitude of 25°. At 11.25 p. m. streamers of a variety of colors rose to an altitude of 45°. At Saint Vincent, Minnesota, the display was faint and continued from 8 p. m. until the morning of the 3d. It appeared in the form of two arches separated by a space of about 5°. The most southerly station reporting this display was Monticello, Iowa.

On the 3d, a faint display was generally observed in New England, the upper lake region and upper Mississippi valley, and was also reported to have been seen at Barnegat City, New Jersey; Emmittsburg, Maryland, and Red Willow, Nebraska. Other displays were observed as follows:—On the 4th, at stations in the upper lake region and in New England; 6th, in the upper lake region, upper Mississippi valley and extreme northwest; 7th, from New England westward to the extreme northwest; 8th, from New England westward to Dakota—this display was also observed at San Francisco, California; 9th, in New England and the lower lakes; 12th, in the upper lake region and upper Mississippi valley, Montana, Wyoming and Washington Territory; 13th, in New England, northern Illinois, Iowa and eastern Nebraska; 15th, at Clay Centre, Kansas, Franklin, Wisconsin, and Clear Creek, Nebraska; 17th, Clear Creek, Nebraska; 18th, at Wellsboro', Pennsylvania; 19th, Cedar Rapids, Iowa; 21st, Bordentown, New Jersey, and Fort Brady, Michigan; from the 25th to 31st, auroras of more or less brilliancy were of nightly occurrence; on the 31st, a bright display was observed at Kiantone, New York. On the 18th, at Denison, Texas, an auroral light was reported to have been seen through the broken clouds from 7.15 to 8.30 p. m.

At Mobile, Alabama, on the 22d, between 10.30 and 11.20 p. m., there were observed in the northern sky, three luminous beams of pale yellow light. These bands had a gradual lateral motion from east to west, cutting the magnetic meridian at nearly right angles. At the same time a single luminous band was observed in the southwestern sky.

Captain J. T. Hein, of the s. s. "Hermod," reported: On the 9th, at 8 p. m., in about N. 45°, W. 42°, observed a brilliant northern light, lasting until 11 p. m. The air was filled with electricity during that time, and every point and wire-rope—even the edges of the smoke-stack—were illuminated by it.

ATMOSPHERIC ELECTRICITY INTERRUPTING TELEGRAPHIC COMMUNICATION.

Fort Supply, Indian Territory, 15th.
Coleman City, Texas, 23d.
Prescott, Arizona, 10th.

THUNDER-STORMS.

Thunder-storms were reported in the various states and territories, as follows:—

Alabama.—Auburn, 19th; Montgomery, 19th, 24th, 25th; Mobile, 24th.

Arizona.—Yuma, 1st, 2d, 12th, 15th, 17th; Prescott, 7th, 10th, 13th to 16th, 29th; Tucson, 9th, 23d; Apache Pass, 11th; Fort Apache, 16th, 29th, 30th.

Arkansas.—Fort Smith, 15th, 18th, 30th; Mount Ida, 23d, 29th; Little Rock, 30th.

California.—San Diego, 1st; Poway, 1st, 3d, 5th, 6th; Princeton, 12th; Fort Yuma, 15th; Sacramento, 27th; San Francisco, 28th; Visalia, 27th 28th.

Colorado.—Fort Collins, 28th, 30th; Denver, 29th.

Connecticut.—Bethel, 19th, 20th; New Haven, 20th; Southington, 20th.

Delaware.—Delaware Breakwater, 19th.

Florida.—Punta Rassa, 8th, 11th, 20th, 25th; Pensacola, 8th, 24th, 25th; Cedar Keys, 19th, 25th; Key West, 20th, 25th, 30th; Jacksonville, 31st; Sanford, 31st.

Georgia.—Forsyth, 15th, 19th, 20th, 31st; Augusta, 19th, 30th, 31st; Atlanta, 19th, 30th; Savannah, 19th.

Idaho.—Lewiston, 28th, 30th; Fort Lapwai, 28th.

Illinois.—They were reported by numerous stations throughout the state on the 13th, 14th, 28th, 29th, 30th, and at Anna, 6th; Swanwick, 6th; Cairo, 15th, 31st.

Indiana.—Lafayette, 5th; New Harmony, 6th; Logansport, 12th; Laconia, 30th; and of general occurrence throughout the state on the 14th.

Indian Territory.—Fort Supply, 15th, 23d.

Iowa.—Keokuk, 13th; Monticello, 13th.

Kansas.—Of general occurrence on the 5th and 4th; Fort Scott, 6th; Topeka, 13th; Independence, 18th.
Kentucky.—Bowling Green, 24th, 29th, 30th; Louisville, 29th, 30th.
Louisiana.—Point Pleasant, 19th, 24th, 25th, 30th, 31st; Port Eads, 13th, 19th, 24th; Shreveport, 19th, 24th, 30th; New Orleans, 24th.
Michigan.—Otisville, 14th; Port Huron, 14th; Lansing, 15th; Alpena, 25th.
Mississippi.—Vicksburg, 25th, 31st; Starkville, 31st.
Missouri.—Archie, 5th; Protem, 6th, 18th; Springfield, 6th; Saint Louis, 13th, 29th.
Nevada.—Pioche, 23d.
New Jersey.—Sandy Hook, 19th; Manasquan, 20th.
New Mexico.—Fort Cummings, 9th; Fort Bayard, 9th; Santa Fé, 11th, 15th, 24th; Fort Union, 12th.
North Carolina.—Of general occurrence in the state on the 19th, 30th, 31st; and were also reported from Life-saving Station No. 6, on the 15th, 16th, 28th; Brevard, 3d; Hatteras, 6th, 15th, 18th, 20th, 26th; Kittyhawk, 15th; Smithville, 20th.
Ohio.—Of general occurrence on the 14th; and at Bethal, 9th; Sandusky, 15th; Cincinnati, 30th.
Oregon.—Albany. 23d.
Pennsylvania.—Williamsport, 15th.
South Carolina.—Stateburg, 19th, 20th, 30th; Charleston, 30th.
Tennessee.—Memphis, 29th, 30th, 31st; Nashville, 29th, 30th, 31st; Chattanooga, 30th, 31st; Murfreesborough, 31st; Knoxville, 31st.
Texas.—They were of general occurrence along the Gulf coast on 13th and 15th; and in northern Texas on 18th, 23d, 24th; and reported Fort McKavett, 16th; Denison, 18th; Fort Elliott, 18th; Palestine, 18th, 19th, 24th, 30th, 31st; Galveston, 19th, 24th.
Utah.—Nephi, 24th.
Virginia.—Chincoteague, 19th; Norfolk, 30th; Wytheville, 30th; Cape Henry, 31st.
Washington.—Spokane Falls, 24th.
West Virginia.—Helvetia, 30th.
Wyoming.—Cheyenne, 29th.

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos have been observed in the various districts, on the following dates:—
New England.—1st, 3d, 6th, 8th, 14th, 15th, 17th, 20th, 21st, 24th, 26th, 29th, 30th, 31st.
Middle Atlantic states.—6th, 7th, 8th, 13th, 17th, 21st, 22d, 24th to 27th, 30th 31st.
South Atlantic states.—6th, 19th, 14th, 15th, 17th, 21st, 24th, 25th, 27th, 29th, 30th.
Eastern Gulf.—6th, 10th, 11th, 14th, 16th, 21st, 23d, 27th, 29th, 30th, 31st.
Western Gulf.—3d, 4th, 9th, 11th, 20th, 22d, 23d, 24th, 29th.
Ohio valley and Tennessee.—2d, 4th, 5th, 7th, 16th, 17th, 20th, 24th, 25th, 27th, 28th.
Lower lakes.—5th, 6th, 8th, 12th, 15th, 20th, 23d to 27th, 30th, 31st.
Upper lakes.—2d, 3d, 5th, 7th, 9th, 10th, 12th, 13th, 16th, 17th, 20th, 24th, 25th, 26th, 29th, 30th, 31st.
Extreme northwest.—3d, 13th, 18th, 19th, 20th, 29th, 30th, 31st.
Upper Mississippi valley.—4th, 5th. 7th, 8th, 9th, 12th, 15th, 16th, 20th, 21st, 22d, 24th, 26th, 28th, 29th.
Missouri valley.—1st to 4th, 7th, 9th, 12th, 13th, 15th, 19th, 23d, 24th.
California.—4th, 6th, 9th to 12th, 24th, 25th, 26th.
Solar halos were also observed in the following states and territories not included in the districts named above:
Arizona.—Prescott, 21st, 25th, 29th.
Idaho.—Lewiston, 1st, 7th, 22d, 25th, 31st.
Kansas.—Clay Centre, 19th; Elk Falls, 12th; Yates Centre, 2d, 6th, 7th, 19th, 20th.
Nevada.—Carson City, 22d.
New Mexico.—Santa Fé, 11th.
Oregon.—Roseburg, 10th.
Texas.—Eagle Pass, 30th.
Utah.—Salt Lake City, 3d.
Washington.—Colfax, 23d.

Lansing, Michigan, 2d: at 4 p. m., a solar halo of 22° radius was observed, with two bright parhelia, one above and the other on the left of the sun. There was an arc of a fainter halo of 45° radius on the left of sun. The clouds were cirro-stratus and cirro-cumulus, of bluish gray.

Mr. B. B. Cutter, of Heath, Massachusetts, reports that a remarkable solar halo was observed at that place at 9.30 a. m., of the 26th.

LUNAR HALOS.

Lunar halos have been observed in the various districts on the following dates:
New England.—1st, 14th, 16th, 17th, 19th to 24th.
Middle Atlantic states.—2d, 16th to 26th.
South Atlantic states.—19th, 20th, 24th, 25th.
Eastern Gulf.—13th, 16th, 19th, 23d, 29th.
Western Gulf.—13th to 16th, 20th, 22d, 24th, 25th, 26th.
Ohio valley and Tennessee.—13th, 15th, 16th, 17th, 19th, 22d, 24th, 25th.
Lower lakes.—12th to 17th, 22d, 24th, 25th, 26th, 29th.
Upper lakes.—13th, 14th, 16th, 17th, 19th, 20th, 23d, 24th, 29th.
Extreme northwest.—15th, 16th, 20th, 23d, 24th.
Upper Mississippi valley.—2d, 13th, 14th, 16th to 19th, 21st.
Missouri valley.—7th, 8th, 12th, 13th, 15th, 16th, 18th, 19th, 20th, 23d.
Northern slope.—13th, 14th, 16th, 19th, 21st, 22d.
Southern slope.—1st, 14th, 21st, 22d.
Southern plateau.—2d, 11th, 13th, 14th, 15th, 21st, 26th to 30th.
Middle plateau.—1st, 19th, 21st, 23d, 24th.
Lunar halos were also observed in the following states and territories not included in the districts named above:
California.—Los Angeles, 12th; Visalia, 3d, 19th, 22d, 24th.
Florida.—Cedar Keys, 16th, 18th.
Kansas.—Salina, 18th, 19th; Yates Centre, 19th, 20th, 23d.
Nevada.—Carson City, 21st, 22d; Pioche. 31st.
Oregon.—Portland, 18th.
Texas.—Eagle Pass, 1st.
Utah.—Nephi, 21st; Salt Lake City, 21st, 22d.
Washington.—Bainbridge Island, 13th, 18th, 19th, 21st.

MIRAGE.

Alexandria, Dakota, 11th, 19th.
Pretty Prairie, Kansas, 1st.
Indianola, Texas, 8th, 9th, 16th, 17th, 20th, 21st, 24th, 26th.

MISCELLANEOUS PHENOMENA.

SUN SPOTS.

The following record of sun spots for the month of March, 1883, has been forwarded by Mr. D. P. Todd, Director of the Lawrence Observatory, Amherst, Massachusetts:—

DATE—Mar., 1883.	No. of new		Disappear'd by solar rotation.		Reappear'd by solar rotation.		Total No. visible.		REMARKS.
	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	Gr'ps	Spots	
1, 4 p. m...	0	0	0	0	0	0	2	6	
2, 9 a. m...	0	0	0	0	0	0	2	5	
3, 9a. m...	0	0	0	0	0	0	1	3	
9, 4 p. m...	4	10	.....	.....	.....	.....	4	10	
15, 11 a. m...	.....	.....	.....	.....	.....	.....	4	12	
16, 11 a. m...	0	5	0	0	0	2	4	17	
17, 11 a. m...	0	5	0	2	0	3	4	20‡	
18, 12 m....	0	3	1	2	0	0	3	20‡	
19, 3 p. m...	0	0	0	0	0	0	3	20‡	
20, 10 a. m...	0	0	1	5	0	0	2	15‡	
21, 9 a. m...	0	5	0	2	0	0	2	20‡	
22, 9a. m...	1	7	1	2	0	0	2	25‡	
23, 11 a. m...	0	5	0	0	0	0	2	30‡	
24, 10 a. m...	0	0	0	0	0	0	2	30‡	
25, 12 m....	0	0	0	0	0	0	2	25‡	
26, 10 a. m...	1	5	0	0	1	5	3	30‡	
28, 7 a. m...	0	5	0	0	0	0	3	25‡	

‡Approximated. Faculæ were seen at the time of every observation.